



## ZEFES Project Introduction

Zero Emission, flexible vehicle platforms with modular powertrains serving the long-haul Freight EcoSystem

Coordinated by Vrije Universiteit Brussel (VUB)

[www.zefes.eu](http://www.zefes.eu)



Funded by  
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# Vision and Story



- 🚛 Europe commits itself to be CO<sub>2</sub> neutral by 2050
- 🚛 Long haul freight transport needs to be transformed to reach this goal
- 🚛 Zero Emission Heavy Duty Vehicles are key to achieve the set-out targets
  - 🚛 Battery Electric Vehicles (BEVs)
  - 🚛 Fuel Cell Electric Vehicles (FCEVs)
- 🚛 ZEFES will contribute to make Europe the leading example for a carbon-neutral transport system



# Current Challenges BEV/FCEV

-  BEVs and FCEVs have a limited range
-  Available payload is affected (e.g. by the weight of the batteries)
-  Lack of available energy infrastructure (charging points and hydrogen filling stations)
-  Higher costs due to energy prices and low-scale production



Incorporation into daily fleet operations is affected by all of the above



# Ambition to take zero-emission long-haul goods transport in Europe to the next level



2

Creating a **pathway** for long-haul BEVs and FCEVs to become more affordable, reliable and more energy efficient

4

Develop technologies which can deliver **promised benefits** to operate in complex transport supply chains.

1

Execute **real-world demonstrations** of long-haul BEVs and FCEVs across Europe.

3




**Mapping** of flexible and abundant charging/refuelling points. Demonstrate **novel charging concepts**.

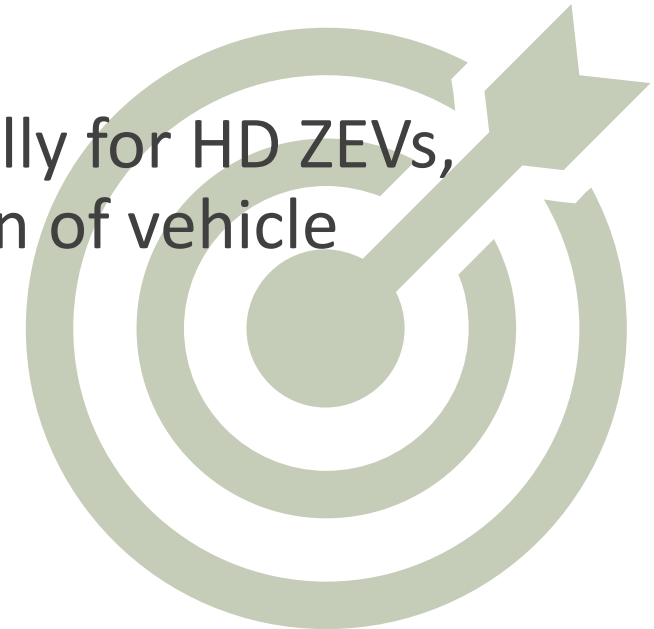
5

Create **Digital Twin with** novel tools for **fleet management** to support the long-haul BEVs and FCEVs vehicles in the logistics supply chains.

# Objectives






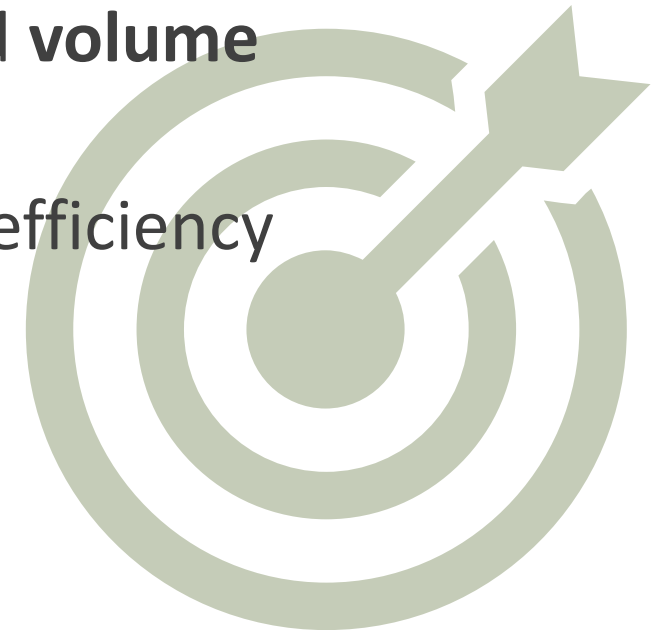
-  Improve **modular** Heavy Duty (HD) Battery Electric Vehicles (BEVs) and Fuel Cell Electric Vehicles (FCEVs)
-  Demonstrate an interoperable **Megawatt Charging System (MCS)** and the location deployment strategy for **hydrogen refuelling stations (HRS)**
-  Provide **digital and fleet management tools** specifically for HD ZEVs, fleet integration with remote operational optimisation of vehicle performance



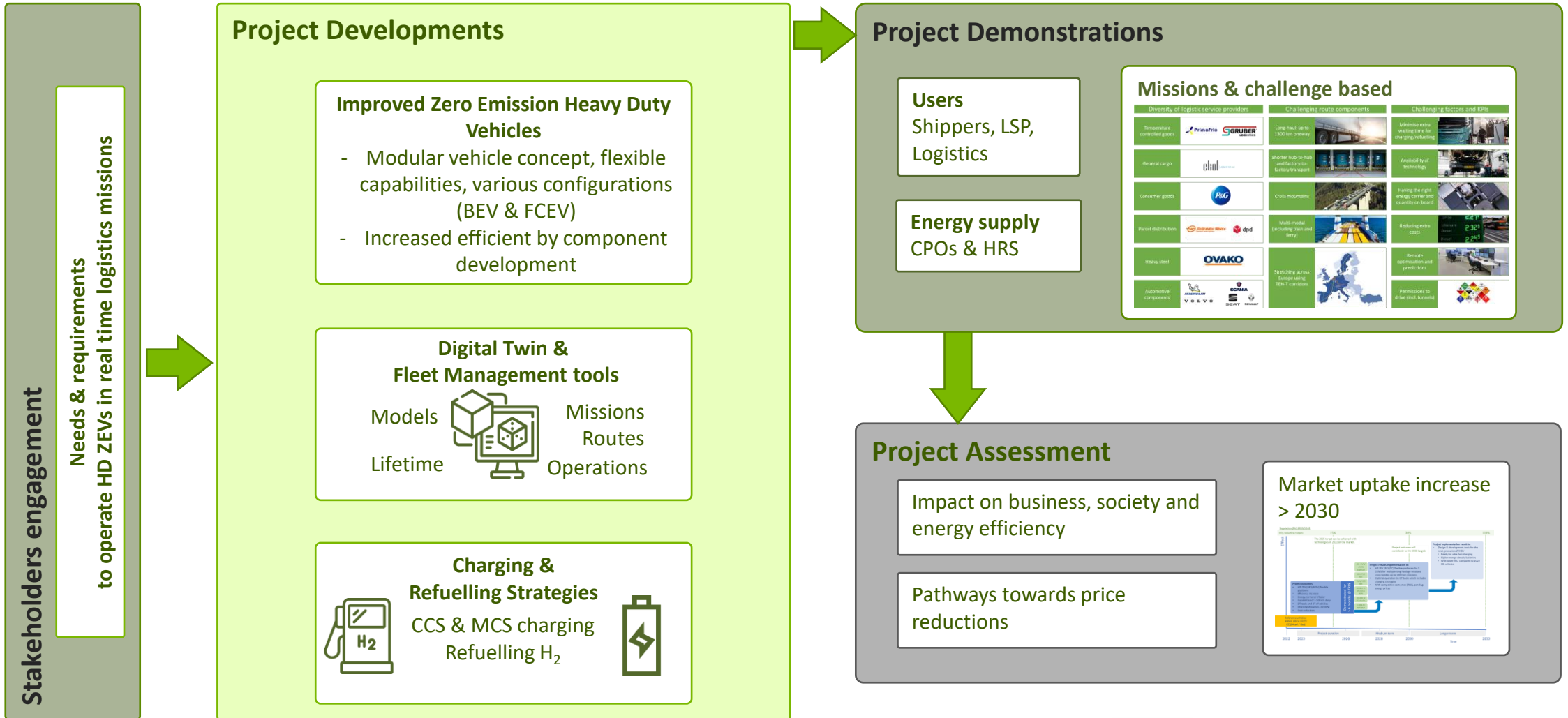
# Objectives



-  Demonstrate missions on national and **cross-border, TEN-T corridors**, fulfilling the requirements for range and payload, and comparing the deployability of BEVs and FCEVs for different mission profiles
-  Define pathways for a significant **price reduction** and **volume increase**
-  Analyse the **impact** on business, society and energy efficiency










# Concept





# Use cases

-  15 demonstrations on TEN-T corridors
-  13 logistics service providers & shippers
-  4 truck OEMs and 2 trailer OEMs
-  Novel vehicle and fast charging concepts
-  Intermodal and cross border
-  15 months under real-world conditions
-  >1Mio kilometres of data



# Challenges and KPIs



- 🚛 Transporting:
  - 🚛 Temperature controlled goods
  - 🚛 General cargo
  - 🚛 Consumer goods
  - 🚛 Parcel distribution
  - 🚛 Heavy steel
  - 🚛 Automotive components

Challenging route components		Challenging factors and KPIs	
Long-haul: up to 1300 km one-way		Minimise extra waiting time for charging/refuelling	
Shorter hub-to-hub and factory-to-factory transport		Availability of technology	
Cross mountains		Having the right energy carrier and quantity on board	
Multi-modal (including train and ferry)		Reducing extra costs	
Stretching across Europe using TEN-T corridors		Remote optimisation and predictions	
		Permissions to drive (incl. tunnels)	

# Partners



40 Partners

- 6 OEM's
- 14 Suppliers
- 11 Shippers & retail
- 9 Research



23 Million EU funding  
39 Million project costs



Start date 01 January 2023  
Duration 42 Months



# AEVETO Cluster



AEVETO Cluster

A collection of logos for the AEVETO Cluster members. At the top left is H2HAUL (a blue truck with "H2HAUL" written on its side). To its right is the ZEFES logo. Below H2HAUL is the NEXT EIRUCK logo (featuring a green battery icon and the text "NEXT EIRUCK"). To its right is the ESCALATE logo (featuring a green tractor icon and the text "ESCALATE"). At the bottom left is the EMPOWER logo (featuring a blue plug icon and the text "EMPOWER"). To its right is the MORE LIFE logo (featuring a stylized "M" and the text "MORE LIFE").

- Mapping Energy Infrastructure
- Finding & exploiting synergies
- Joined events and communication strategy to maximize impact

# Contact

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Thank you for your attention!



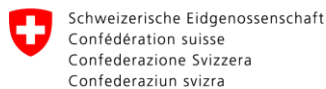
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